

AMENDMENTS TO THE CLAIMS

Please cancel claims 25, 26, 42 and 43 as shown below, without prejudice.

Please amend claims 22 and 39 as shown in the following complete list of claims.

1.-21. (Canceled).

22. (Currently amended) A nucleic acid molecule comprising a nucleotide sequence encoding a ~~biofilament~~ polypeptide and a regulatory sequence that directs expression of a said polypeptide in milk-producing cells of a ruminant, wherein said regulatory sequence is operably linked to said nucleotide sequence, ~~and~~ wherein said ~~biofilament~~ polypeptide comprises a biofilament polypeptide and a leader sequence that enables secretion of said ~~biofilament~~ polypeptide by said milk-producing cells into milk of the ruminant, and wherein said biofilament polypeptide comprises a plurality of repeat motifs as present in dragline silk produced by *Nephila clavipes* or *Araneus diadematus*.

23. (Previously presented) The nucleic acid molecule of claim 22, wherein the regulatory sequence is a whey acidic protein promoter, an α S1-casein promoter, an α S2-casein promoter, a β -casein promoter, a κ casein promoter, a β -lactoglobin promoter, or an α -lactalbumin promoter.

24. (Previously presented) The nucleic acid molecule of claim 22, wherein the ruminant is a goat.

25.-26. (Canceled).

27. (Previously presented) The nucleic acid molecule of claim 22, wherein said ~~biofilament~~ polypeptide comprises a poly-alanine segment that forms a β -crystal.

28. (Previously presented) The nucleic acid molecule of claim 22, wherein said ~~biofilament~~ polypeptide comprises an amorphous domain that forms a β -pleated sheet with inter- β sheet spacings that are between about 3 angstroms and about 8 angstroms in size.

29. (Previously presented) The nucleic acid molecule of claim 22, wherein said biofilament polypeptide has a molecular weight between about 274,000 daltons to about 750,000 daltons.

30. (Previously presented) The nucleic acid molecule of claim 22, wherein said biofilament polypeptide comprises an amorphous domain and a crystal forming domain.

31. (Previously presented) The nucleic acid molecule of claim 30, wherein said amorphous domain and said crystal forming domain have a sequence that is at least 50% identical to SEQ ID NO: 2.

32. (Previously presented) The nucleic acid molecule of claim 31, wherein said amorphous domain and crystal forming domain have a sequence that is at least 90% identical to SEQ ID NO: 2.

33. (Previously presented) The nucleic acid molecule of claim 22, wherein said biofilament polypeptide comprises an amino acid sequence of SEQ ID NO: 2.

34. (Previously presented) The nucleic acid molecule of claim 22, wherein said biofilament polypeptide comprises a consensus sequence that is at least 50% identical to SEQ ID NO: 3.

35. (Previously presented) The nucleic acid molecule of claim 34, wherein said biofilament polypeptide has a consensus sequence that is at least 90% identical to SEQ ID NO: 3.

36. (Previously presented) The nucleic acid molecule of claim 22, wherein said biofilament polypeptide comprises an amino acid sequence of SEQ ID NO: 3.

37.-38. (Canceled).

39. (Currently amended) A transgenic female ruminant comprising mammary tissue germline and somatic cells that comprise the nucleic acid molecule of claim 22, wherein the ruminant secretes a biofilament polypeptide into milk.

40. (Previously presented) A method for producing a biofilament polypeptide, comprising: providing a transgenic female ruminant of claim 39 and isolating the biofilament polypeptide from milk produced by the transgenic female ruminant.

41. (Previously presented) A method for producing a biofilament polypeptide, comprising:

(a) culturing a mammary epithelial cell comprising the nucleic acid molecule of claim 22 under conditions in which said biofilament polypeptide is expressed and secreted into a culture medium of said culturing mammary epithelial cell; and

(b) isolating said biofilament polypeptide from said culture medium.

42.-43. (Canceled).

44. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises a poly-alanine segment that forms a β -crystal.

45. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises an amorphous domain that forms a β -pleated sheet with inter- β sheet spacings that are between about 3 angstroms and about 8 angstroms in size.

46. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide has a molecular weight between about 274,000 daltons to about 750,000 daltons.

47. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises an amorphous domain and a crystal forming domain.

48. (Previously presented) The method of claim 47, wherein said amorphous domain and said crystal forming domain have a sequence that is at least 50% identical to SEQ ID NO: 2.

49. (Previously presented) The method of claim 48, wherein said amorphous domain and said crystal forming domain have a sequence that is at least 90% identical to SEQ ID NO: 2.

50. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises an amino acid sequence of SEQ ID NO: 2.

51. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises a consensus sequence that is at least 50% identical to SEQ ID NO: 3.

52. (Previously presented) The method of claim 51, wherein said biofilament polypeptide has a consensus sequence that is at least 90% identical to SEQ ID NO: 3.

53. (Previously presented) The method of claim 40 or 41, wherein said biofilament polypeptide comprises an amino acid sequence of SEQ ID NO: 3.

54. (Previously presented) The nucleic acid molecule of claim 22, wherein said encoded biofilament polypeptide comprises a *Nephila* spidroin 1 polypeptide, wherein said regulatory sequence is a goat β -casein promoter, and wherein said leader sequence comprises goat β -casein leader sequence.

55. (Previously presented) The nucleic acid molecule of claim 22, wherein said encoded biofilament polypeptide comprises a *Nephila* spidroin 1 polypeptide, wherein said regulatory sequence is a whey acidic protein promoter, and wherein said leader sequence comprises whey acidic protein leader sequence.

56. (Previously presented) The nucleic acid molecule of claim 30, wherein said biofilament polypeptide further comprises a *Nephila* spidroin 1 polypeptide.

57. (Previously presented) The nucleic acid molecule of claim 30, wherein said biofilament polypeptide further comprises a *Nephila* spidroin 2 polypeptide.

58. (Previously presented) The nucleic acid molecule of claim 30, wherein said biofilament polypeptide further comprises an *Araneus diadematus* fibroin 3 (“ADF-3”) polypeptide.